Lunar Supply Pod
Honorable Mention
for
NASA HUNCH
Design and Prototyping 2021

Congratulations for being chosen to receive an Honorable Mention for NASA HUNCH Design and Prototype 2021. This is to provide more praise for those who have done significant design and testing. Take pride in knowing that your work demonstrated many significant innovations and ideas. HUNCH recognizes that your team put a lot of thought and time into your design and testing. You had multiple prototypes you worked through, completed several interesting ideas, did testing with each prototype, demonstrated a deeper knowledge and skill in CAD.

Although you are not being invited to the Final Design Review, your work will remain on the HUNCH design and prototype page where it will continue to show the hard work your team put into the project.

Lunar Supply Pods

Spherical Supply Pod with Struts

School: Bridgeland Highschool
Teacher: Mr. Laughlin

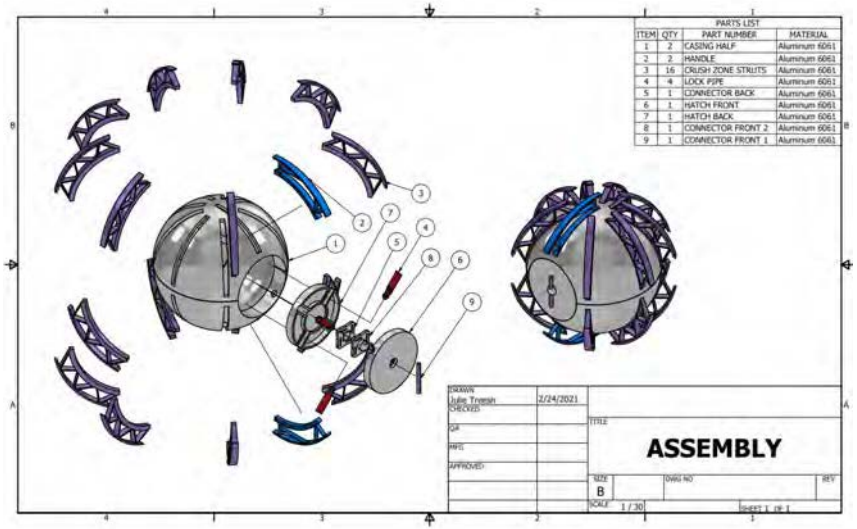
Creators:

Isaak Gonzales

An 11th grader in Mr. Laughlin's Engineering Design and Presentation class. For this project. He mostly worked on creating the original sketch, beginning parts, and trifold.

Julie Treesh

An 11th grader in Mr. Laughlin's Engineering Design and Presentation class. She worked mostly on the drawing files, fixing/changing the design, and setting up the prototype.



This Pod is used to supply water, food, and other day to day items needed while on the moon. The pods had to be inexpensive and durable so the materials they are transporting do not get damaged.

Our design includes crush zone struts to help keep the supplies intact, a hatch to keep items secure, and it is shaped so that it can roll to a stop instead of hitting the ground and stopping immediately.

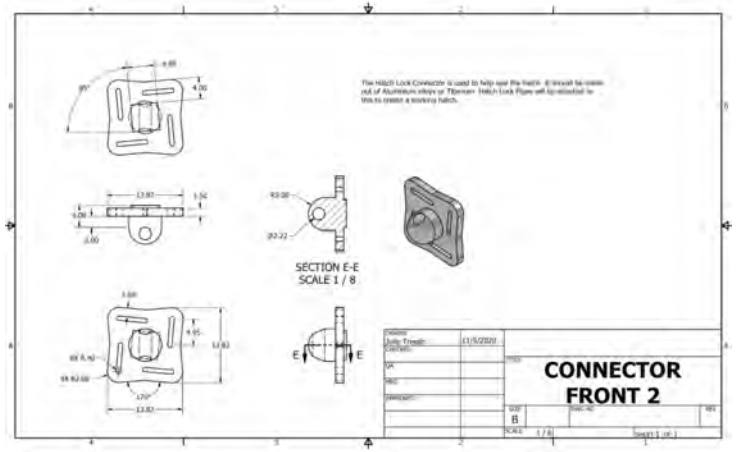
Prototype

Fully Assembled:

Connector Front 1 can be turned in order to make the Lock Pipes move.

Different Parts of the Design:

PARTS LIST			
ITEM	QTY	PART NUMBER	MATERIAL
1	2	CASING HALF	Aluminum 6061
2	2	HANDLE	Aluminum 6061
3	16	CRUSH ZONE STRUTS	Aluminum 6061
4	4	LOCK PIPE	Aluminum 6061
5	1	CONNECTOR BACK	Aluminum 6061
6	1	HATCH FRONT	Aluminum 6061
7	1	HATCH BACK	Aluminum 6061
8	1	CONNECTOR FRONT 2	Aluminum 6061
9	1	CONNECTOR FRONT 1	Aluminum 6061



Critical Design Review

Project: **Lunar Supply Pods**

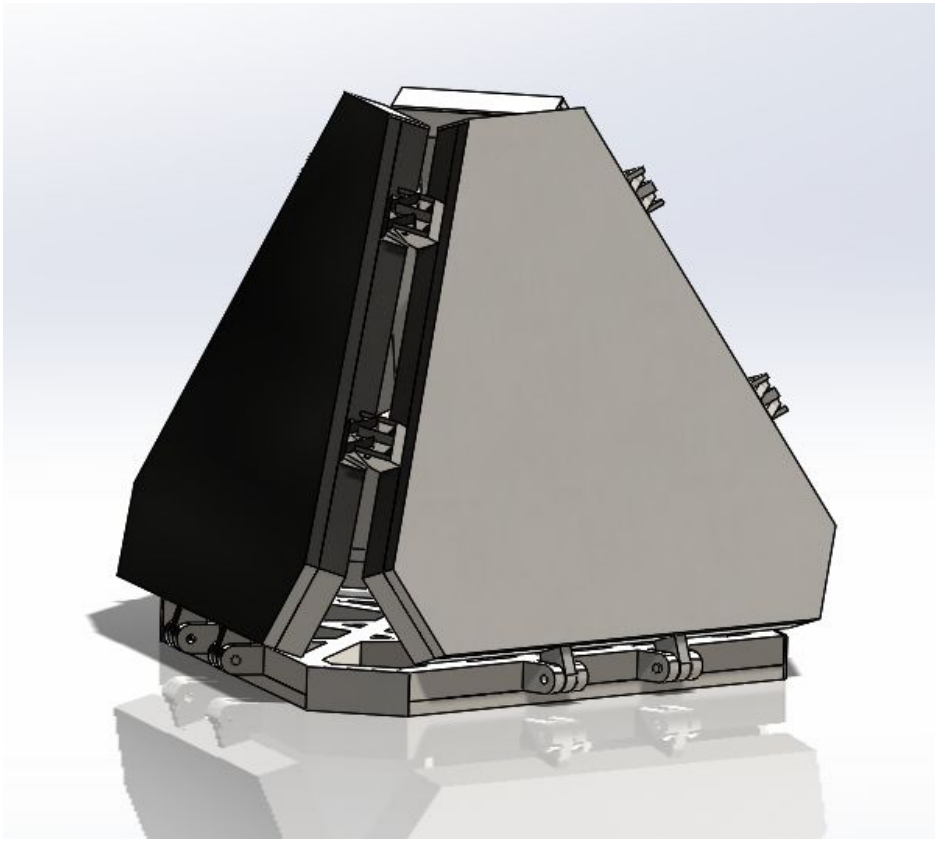
School name: **Space Coast Jr/Sr High School**

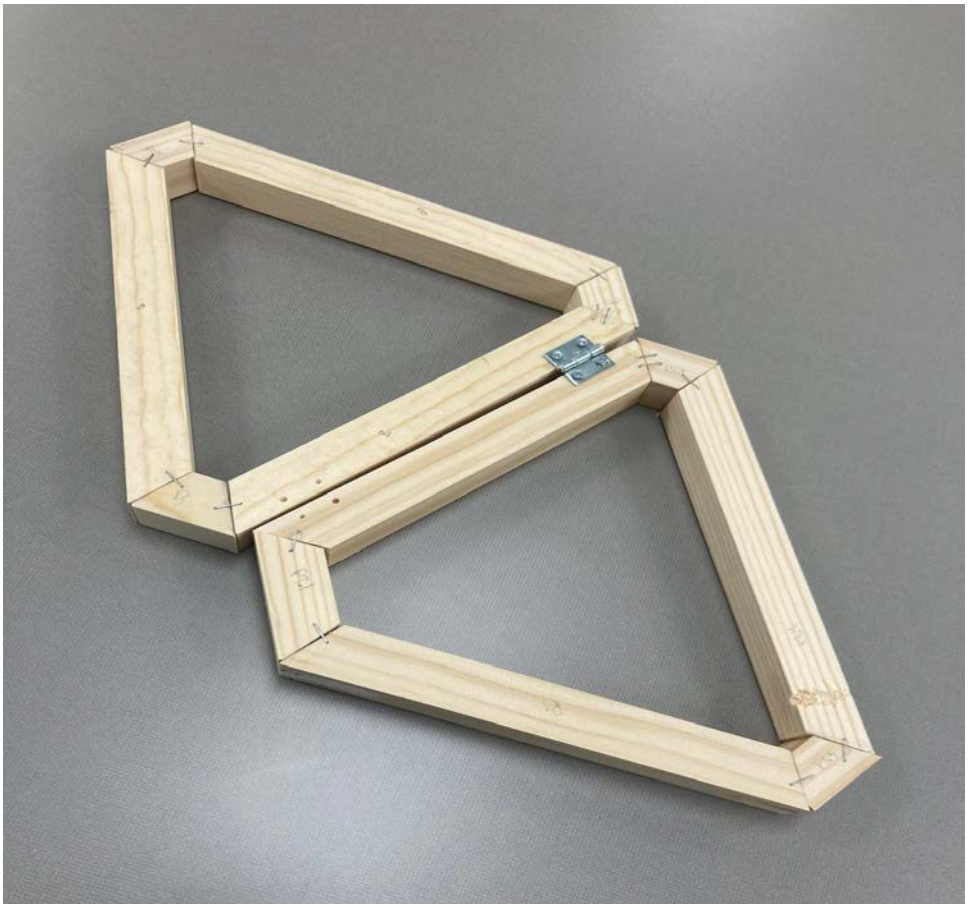
Teacher: **Mr. Luis Reyes**

Team Members: **Sean Tomlinson Zachary Bramelett**

Description:

Our prototype shows the basic functionality of our design of the lunar supply pod. It demonstrates how it opens and we will explain how it will lock. Our prototype does satisfy the constraints, it shows how the basic parts will work and we can explain how the lunar supply pod can land on the surface of the moon. We understand the microgravity on the moon and how our design could fail depending on the circumstances. The gravity on the moon is about 1/6th of the gravity on earth so us using that we considered different scenarios on how the lunar supply pod would be launched off a vehicle. We have the solidworks file showing the design that can be replicated including what material we chose which was stainless steel. Since we do not have a software that can prove that our design works we have to explain more clearly on how the functionality of the design is gonna work. Since our design is a reversed engineered design of the opportunity lander that delivered the rover to mars, it was already done and proven it works so it is easier to produce.





NASA HUNCH

Critical Design Review

Project name: **Lunar Supply Pod**

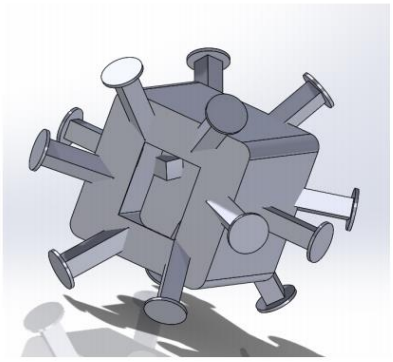
School name: **Space Coast Jr/Sr High School**

Teacher: **Mr. Luis Reyes**

Students: **Nicholas Scuderi, Kevin Taylor**

Description:

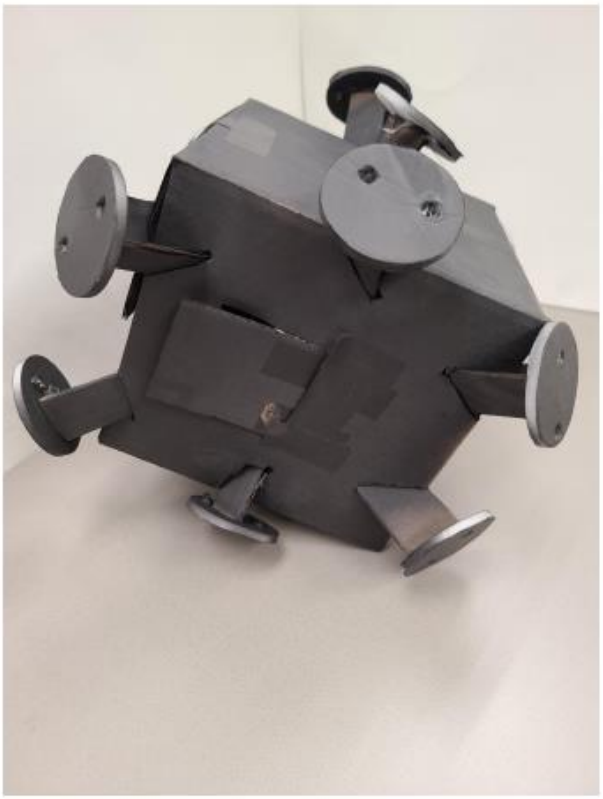
Our project satisfies the requirements and the constraints. We made the pod to have a design to be able to crash land on the moon. Our prototype has a small 3D model that demonstrates how it will be used. The legs will work as a cushion to absorb the impact of the crash. The tests showed that our design works and can be a good way to deliver supplies on the moon. The lags can be reused because once they break or bend, they can be taken off to then reuse on a different pod. With there being no gravity, we designed the pod with legs all around it knowing that it would be crash landing on the moon. Since we don't know what face, it is going to hit first the legs are meant to help with that. While our design doesn't look like something like anything you can get it is a very simple design.



This is the solid works drawing and this shows on how it is a little bit different from the CDR prototype and shows how the legs were put in and how the door was changed.

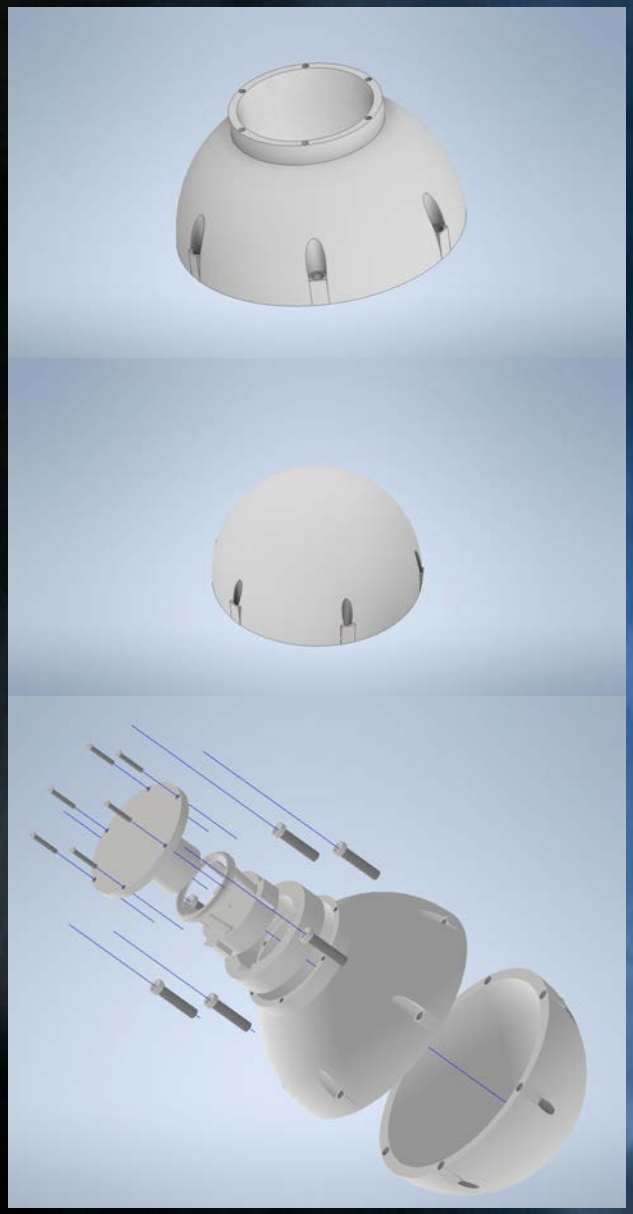
This is the end of the leg which shows that it has holes for the mover.

This is a look at the legs can work by crashing on the moon.



This is a look at the door and where people will be go in and out.

Supply Pod–Halves/IPN



Limitations

1. Weight of supply pod
2. Size of supply pod
3. Velocity at touchdown
4. Strength of supply pod
5. Spinning of pod In air and on the impact of the ground
6. Angle of contact with surface
7. The amount of fuel to slow down the pod
8. Undulating of the moon's surface
9. Surface particle sizes
10. Internal and external dampening of container's effects on the pod

Nasa Hunch Project

Supply Pod

By

Thomas Creedon, Ethan Bauer, Mateo Tovar, and Miguel Munoz

For

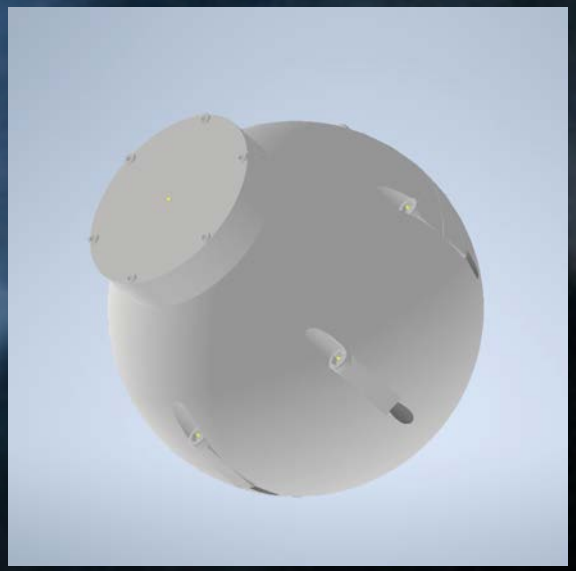
Instructor Mr. Merritt

Architectural/ Civil Engineering

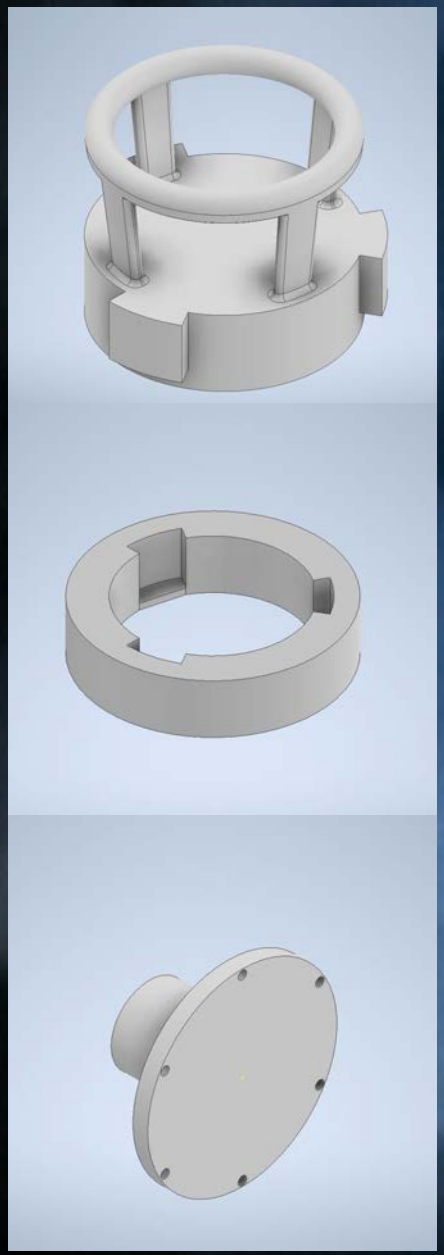
Clear Creek High School

Clear Creek ISD

League City, TX



Inner Parts



Problem Statement

Design and create a Supply Pod that can hold supplies that can with stand a high velocity impact. The Pod must also be able to make putting supplies on the moon at a cost-efficient rate.

3D Printed Parts


CLEAR CREEK
WILDCATS
2020
March 18, 1937
Budded on Earth
to bloom in Heaven